

Application No.: 10/790,502

Docket No.: 60680-1843

**REMARKS**

Applicants have carefully reviewed the Office Action mailed November 4, 2004, and thank Examiner Bissett for her detailed review of the pending claims. Claims 25-31 remain pending in this application. Applicants respectfully request reconsideration of the present application in view of the above amendment and the following remarks.

**Claim Rejections – Double Patenting**

Claims 25 through 31 have all been rejected using US Patent No. 6,730,363 (“the ‘363 patent”) as at least the base reference. The ‘363 patent issued from the parent application associated with the present application. While Applicants respectfully submit that one or more of the claims are patentably distinct from those of the ‘363 patent and do not hereby acquiesce to the position taken by the Examiner, a terminal disclaimer is enclosed. For example, Applicants respectfully disagree that claims 27-28 are prima facie obvious in view of the ‘363 patent and the statement made by the Examiner with respect to cure time. Nevertheless, in view of the submission of the terminal disclaimer, the rejections based on double patenting have been addressed.

**Claim Rejections – 35 U.S.C. § 103****A. Claims 29-31 based on the Combination of Pellegrini and Siebert**

The Examiner has rejected claims 29-31 under Section 103(a) as being unpatentable over US 4,197,178 (“Pellegrini”) in view of US 4,025,578 (“Siebert”). Applicants respectfully traverse the rejection.

Independent claim 25 is a process claim reciting that the coating precursor is adapted to polymerize or to cross-link in response to infrared radiation and including the step of exposing the coating precursor on the fuel cell plate to infrared radiation to initiate polymerization or cross-linking. Independent claim 29 is directed to an insulated fuel cell plate that includes a solid coating polymerized or cross-linked in response to infrared radiation.

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1. Radiation versus Heating

As admitted by the Examiner, neither Pellegri nor Siebert fail to teach coatings cured by methods other than heating. Instead, the Examiner takes the "position that the cured coatings of the reference would be indistinguishable from those cured by infrared radiation. It is the Examiner's position that the claimed cure process in this case would not provide a patentably distinct product." (Office Action, page 5). Applicants respectfully traverse.

First, without explicitly so stating, the Examiner has taken Office Notice that the coatings cured by heating are indistinguishable from those cured by infrared radiation in the context of the claimed invention. Thus, Applicant requests that support for the taking of Official Notice be provided as required by 37 CFR 1.104(d)(2) and MPEP 2144.04.

Second, independent claim 25 is a process claim with method steps. Thus, the Examiner's statement concerning the alleged providing of a product that is not patentably distinct when radiation is used as opposed to heating is totally irrelevant to the process claim, which focuses on the process for sealing and insulating a fuel cell plate, as opposed to the end product itself.

Third, the application explicitly discusses the advantage of using radiation as opposed to heat in the context of the claimed invention. Thus, the Examiner's suggestion that the two are interchangeable merely helps to confirm the non-obviousness of the claimed invention. Radiation-cured coatings overcome the problem of the separator plates warping when cured at the high temperatures necessary with heat-cured coatings (see page 6, lines 26-31 and page 7, lines 1-7 of the present application). Thus, the inclusion of the claim limitations in both independent claims 25 and 29 appropriately distinguishes the present invention from the prior art. The inventive process is claimed. The inventive fuel plate is claimed, and is distinguishable from the prior art since undesirable warpage is minimized in accordance with the teachings of the present invention.

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Moreover, while acknowledging the problem of warpage, Pellegrini addresses the issue in an entirely different way. It teaches adding hardeners to the gas-impermeable separator plates as opposed to using radiation-cured coatings. (see column 4, lines 59-62 of the Pellegrini patent) Thus, it teaches directly away from the claimed invention.

As a result, the claims are patentably distinct.

## 2. Lack of Motivation to Combine

Independently of the complete lack of teaching of critical claim element in each of the independent claims, Applicant respectfully traverses the 103(a) rejections to independent claims 25 and 29 because there is no suggestion, motivation, or objective reason to combine the cited references. "If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue." *In re Rouffet*, 47 USPQ2d 1453 at 1457 (Fed. Cir. 1998). "Rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be 'an illogical and inappropriate process by which to determine patentability'." *Id.* quoting *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

*In re Oetiker* further provides that "[t]here must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination." "The examiner must show reasons that the skilled artisan, confronted with the same problem as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. *In re Rouffet*, 47 USPQ2d 1453, at 1458 (Fed. Cir. 1998).

As established by Federal Circuit precedent, to establish a *prima facie* case of obviousness, the examiner must provide some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. See, e.g., *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) ("To support the conclusion that the claimed invention is

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directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references"); *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987) ("When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references"; *ACS Hosp. Sys. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984) ("Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination"); *accord* MPEP 2143.

It is established law that one "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *Ecolochem, Inc. v. Southern Cal. Edison Co.*, 227 F.3d 1361, 1371, 56 USPQ2d 1065 (Fed. Cir. 2000) (citing *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1780, 1783 (Fed. Cir. 1988)). Indeed, "[c]ombining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability – the essence of hindsight." *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Moreover, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Applicants respectfully submit that it is inappropriate to combine Pellegrini and Siebert to reject the claims since there is no suggestion to combine. The alleged motivation for combining the claims comes from a statement by the Examiner and not from either one of the references. There is nothing in either Pellegrini or Siebert that would lead one of ordinary skill in the art to take the type of coatings that are in Siebert and use them as gaskets in Pellegrini.

Moreover, the alleged motivation itself has nothing to do with the claimed invention. The Examiner talks about the motivation being that "the epoxy compositions of Siebert's invention are castable and hence more easily applied". The claimed invention teaches away from castability. Instead, a coating is applied and then the coating is cross-linked in response to infrared radiation.

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3. The Dependent claims are also patentably distinct.

In addition to the patentability of independent claims 25 and 29 over the combination of Pellegrini and Siebert for the reasons discussed above, the dependent claims are also independently patentable. For example, the Examiner does not show how the combination of the two references teaches applying the coating precursor using screen printing as recited in claim 26.

Further, the prior art does not teach the importance of having the coating precursor exposed to infrared radiation for less than about forty five minutes, as recited in claim 27 or less than about thirty minutes as recited in claim 28. As discussed in the application, these times are required for the appropriate chemical reaction to take place with respect to the precursor coating when subjected to radiation. [See, e.g., Paragraph 0021]

With respect to claim 30, neither of the references teaches a coating less than about 250  $\mu$  thick or less than about 150  $\mu$  thick as recited in claim 31, such that the coating is exposed to infrared radiation. The Examiner talks about the choice of coating thickness to balance cost and insulation properties of the cell structure as rendering the coating thickness selected as being obvious. However, the application itself gives substantially different motivations for the choice of the coating thickness:

As can be seen in Fig. 1 and Fig. 2, the plates 106, 108 include a resilient coating 132, which is applied on either or both of the major surfaces 122, 124 of the plates 106, 108. As noted above, the coating 132 prevents mixing of disparate fluid streams during operation of the fuel cell assembly 100, and prevents electrical conduction among adjacent plates 106, 108. In addition, the coating 132 is chemically resistant to heat transfer fluids and electrolytes used in the various types of fuel cells, does not substantially interfere with fuel cell chemistry, is thermally stable at operating temperatures, and exhibits good adhesion to the plates 106, 108. The thickness and mechanical properties of the coating 132 will depend on the dimensions and properties of the plates 106, 108 and the active portion 104 of each of the fuel cells 102. Typically, however, the coating 132 is about 50  $\mu$  to 250  $\mu$  thick, has a tensile strength greater than about 500 psi, an elongation greater than about 100 percent, and a Shore A hardness between about 45 and about 85.

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[Paragraph 019]. Thus, the choice of coating thickness is non-obvious in the context of the claimed invention and one of the patentable aspects.

Accordingly, in view of the foregoing, the pending claims are patentably distinct over the combination of Pellegrini and Siebert.

B. Claims 25 and 27-28 based on the Combination of Pellegrini and Ying

Claims 25 and 27-28 were rejected under Section 103(a) as being unpatentable over Pellegrini in view of US 6,183,901 ("Ying"). Applicants respectfully traverse the rejection.

There is no motivation or suggestion to combine Pellegrini and Ying to result in the claimed invention. Pellegrini teaches gas-impermeable separator plates having a heat-curable coating. Pellegrini fails to mention coatings cured by methods other than heating, such as infrared radiation, as claimed in the present application. To fill the deficiencies in Pellegrini, the Examiner uses Ying. The Ying patent discloses porous separator plates having a protective coating cured by heat, UV light, visible light, infrared radiation or electron beam radiation. The Ying patent presents this list of available methods and then specifically teaches the use of UV lamps to cure the coating.

As discussed above, gas-impermeable separator plates, as in Pellegrini and the present invention, tend to warp under the high temperatures necessary to cure heat-curable coatings. Meanwhile, porous separator plates, as in Ying, are made from a substantially different composition and do not tend to warp under high temperatures. Therefore, porous separator plates may withstand any variety of curing techniques including heat or infrared radiation. In contrast, to overcome the problem of warpage Pellegrini teaches adding hardeners to the gas-impermeable separator plates. The claimed invention overcomes the warpage problem associated with gas-impermeable separator plates by curing the coating precursor with infrared radiation, instead of heat. Accordingly, there is no motivation or suggestion to combine the teachings of the Pellegrini regarding gas-impermeable separator plates having hardeners and receiving heat with Ying regarding porous separator plates receiving infrared radiation.

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Further, the Pellegri patent, in fact, teaches away from using infrared radiation to polymerize or cross-link the coating precursor applied to gas-impermeable plates. The Pellegri patent teaches adding aromatic amines to the separator plates to prevent the separator plates from warping under the high temperatures necessary to cure the coating (see column 4, lines 59-62 of the Pellegri patent). Aromatic amines are hardeners and permit the separator plates to withstand higher temperatures. Instead of adding hardeners, the coating of the present invention is subjected to infrared radiation instead of heat to polymerize or cross-link the coating. Teaching the use of aromatic amines by the Pellegri patent teaches away from using infrared radiation as in the present application.

Moreover, the Examiner's alleged motivation for combining the two references, "to improve the toughness of the separators" or "to enhance the flexibility and toughness of the separator", is not the motivation taught for the present invention, as discussed above. On the contrary, the motivations include increased tensile strength and hardness. Thus, for at least these reasons, the rejection under 35 U.S.C. §103(a) of the subject matter of claim 25 is overcome.

With respect to dependent claims 27 and 28, the Examiner does not point to any teachings in either reference that recite these limitations in the context of the claimed invention. Thus, these claims are independently patentable.

**B. Claim 26 based on the Combination of Pellegri, Ying and Canfield**

The arguments made with respect to the combination of Pellegri and Ying are applicable to the rejection of claim 26. Further, however, claim 26 is patentably distinct because there is no motivation to combine the references. The motivation recited by the Examiner is not taught in any of the references and is inapplicable to the rationale for the claimed invention as set forth in the present application. Thus, the claim is respectfully submitted to be patentably distinct.

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**CONCLUSION**

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

It is believed that any additional fees due with respect to this paper have already been identified in any transmittal accompanying this paper. However, if any additional fees are required in connection with the filing of this paper that are not identified in any accompanying transmittal, permission is given to charge account number 18-0013 in the name of Rader, Fishman and Grauer PLLC. If the Examiner has any question or comments, she is kindly urged to call the undersigned to facilitate prosecution.

Dated: March 10, 2005

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